

at separate intervals, and I inserted some of the poison from a fang into a wound made for its reception, nevertheless nothing more than local swelling and pain could be induced in her system. I cannot account for the immunity enjoyed by that animal, as the same reptiles caused deadly poisoning in other dogs.

From the universal dissemination of this plant throughout the southwestern portion of the United States and Mexico, I believe a knowledge of its therapeutic properties will prove of much importance to the public, as it grows plentifully through the whole year; its preparation is simple, and its administration is unattended with danger to the animal economy. I have learned from the Mexicans of many cases of poisoning by the rattlesnake-bite cured by its use, and in no case has it failed to cure, or has it done injury to the patient.

In my reading, I find that other varieties of the *Euphorbiaceæ* enjoy a reputation as remedies against the poisons of noxious reptiles. The *Euphorbia capitata*, *E. corollata*, *E. palustris*, and *E. villosa*, are somewhat celebrated in southern countries as specifics against the poison of venomous serpents and the bite of rabid animals. One of the strongest arguments that I may adduce in favour of the *Euphorbia prostrata* is, that amongst the Mexican population of Arizona and Sonora, who are frequently subjected to poisonous wounds from the rattlesnake, coral snake, "vinegrilla" (*Thelyphonus*), scorpion, centipede, tarantula, and a host of other hideous creatures, in no instance does the injury result fatally, as they resort at once to their specific, yeilded "*Gollindrinera*," which never fails to produce a sure and speedy cure. In the hands of unscientific persons, I look upon it as an invaluable specific, possessing many advantages over that of M. Bibron, as it can be readily procured, easily prepared, and administered by any person, free from the many difficulties and disadvantages attending the preparation, preservation, and administration of M. Bibron's valuable remedy.

FORT BUCHANAN, ARIZONA, Sept. 7, 1860.

ART. V.—*On Loss of Sight from Effusions under the Retina.* By HENRY D. NOYES, M. D., Assistant Surgeon to the New York Eye Infirmary.

OUR knowledge in relation to cases of blindness, in which the immediate cause of loss of sight depends upon detachment of the retina from the choroid coat, by effusion of fluid between the two membranes, has been widely enlarged by the use of the ophthalmoscope; but before this instrument was introduced, the lesion was well recognized as one of the most fatal injuries to vision, and, in some cases, with the pupil widely dilated, it could be discerned by the naked eye in the living subject.

The kinds of effusion I mean, are of serum and of blood.¹ The effusion takes place, 1st, as the result of violence; 2d, as the result of disease.

1st. When it is the effect of injury from blows or falls, there may of course be more or less damage done to other parts of the eye, such as rupture of sclerotica, or cornea, wounds of the iris, or capsule, etc. I have in view cases where the loss of sight would not occur, or would not be so serious, unless the effusion under the retina took place, in addition to the remaining injuries.

CASE 1. Detachment of the retina by a blow upon the eye.—Israel W——, aged 21, native of New York, farmer, came to the Infirmary April 1st, 1860. The right eye is entirely blind; sight in the left eye is imperfect, and he has *museæ volitantes*. About fifteen months ago he was struck with the fist upon the right eye; there followed ecchymosis of the lids, and swelling, that kept the eye shut for several days. No inflammation of the eye occurred, or anything to excite suspicion of injury to sight. In three weeks afterwards he discovered, accidentally, that this eye was sightless. Has never had pain or external redness of either eye.

Examination by the ophthalmoscope shows that in the blind eye the retina is lifted from the choroid over all its extent, except for a narrow space, upon the nasal side, by a drab-coloured fluid; the optic nerve clearly seen. In the other eye the vitreous is hazy, and in it is seen a flocculent membrane floating about, just behind the lens; the optic nerve is very dimly seen. The clear evidences of choroiditis in this eye, invite the conclusion that similar disease may have existed in the blinded one, and that this predisposed to the disastrous sub-retinal effusion which the blow produced.

2d. Effusions under the retina, resulting from disease. Among the causes to be assigned are, alcoholic intoxication; choroiditis, whether syphilitic or not; sclerotico-choroiditis-posterior; retinitis, from albuminuria or from any cause; that meningitis may cause this accident, there seems some ground for believing.

CASE 2. Intoxication, effusion of blood under the retina.—John W——, aged 35, born in New York, came to the Infirmary in August, 1860, and was under the care of Dr. Bumstead, to whom I am indebted for notes of the case. He is usually a temperate man, and during the shooting season his business is to kill game for market. He was hunting with a party of gentlemen in the early part of the season, and one night drank wine with them until he became intoxicated. He felt badly the next day, had a severe headache, and upon trying his gun, found, to his utter astonishment, that one eye was blind. Vision remained the same until he came to the Infirmary; to external appearance, there is nothing abnormal in the eye; the pupil is of natural size, and acts feebly. When the pupil is fully dilated

¹ When the effusion is of blood, I mean cases where it is in such quantities as to push the retina an appreciable distance from the choroid, so as to permit the membrane to undulate, as it floats upon the subjacent fluid. A less quantity of blood upon, or in, or under, the retina, constitutes what may more correctly be called apoplexy of the retina, and in its subsequent history has features quite different from the cases now under consideration.

with atropine, a dusky or smoky-coloured reflex is given out from the bottom of the eye, which is to be seen only in certain positions. With the ophthalmoscope, the retina is seen to be detached upon the temporal and inferior side of the globe. The limit between the applied and separated portions is sharply defined. The vessels of the retina bend at an angle, as they pass from one region to the other, and tremble with all the movements of the projecting sac. The colour of the sac, that is, of the fluid beneath it, is a deep blue. Patient can see objects held at the temporal side of his eye, and when held much below the axis of vision, but in other parts of the field sees nothing. This limitation of the visual field is explained by the position of the effusion.

CASE 3. Constitutional syphilis; irido-choroiditis; detachment of the retina.—Mary McCaffrey, aged 43, Ireland, widow, came under my observation, four months ago, at the Infirmary. She has strabismus divergens of the right eye, and a central opacity of the cornea; with this eye she sees nothing. Sight in the left eye is bad, can only read coarse print, No. 13 of Jaeger's test print, and cannot discern objects at a little distance. She complains of numerous black specks floating in the air, and wears a deep hood, to shade her eyes from the light. In looking at objects, she turns her eye upon them obliquely, bending her head downwards.

Ophthalmoscopic examination of the squinting eye shows that in it the retina is completely stripped from the choroid, by serous effusion; the colour is a light gray. In the other eye, the vitreous humor is filled with floating particles, and the pigment is much removed from the epithelium of the choroid.

The patient was nine years ago a patient of the Infirmary, in the service of Dr. Halsted. She then had syphilitic iritis, and a secondary cutaneous eruption. She has had also syphilitic rheumatism. She admits having contracted chancre from her husband, and she afterwards gave birth to an infant, which was a well-marked specimen of hereditary syphilis. She was treated at that time with mercurials, and there are now no evidences of syphilitic disease, except in the ravages done to sight. There are no adhesions of the pupil indicating foregone iritis. She says she lost the sight of the right eye suddenly one day, while standing at a table ironing, and that the diverging squint came on gradually afterwards.

CASE 4. Sub-retinal effusion in an eye probably affected with sclerotic-choroiditis-posterior.—The patient, E. F., aged 23, born in London, married, was in charge of Dr. Hinton, who kindly permits me to make use of the case. She is a stout woman, with florid face, and was in such agitation when she came to the Infirmary, that she could hardly speak coherently. Was nursing an infant of twelve months; had always had good health, and while suckling, drank about a pint of beer per diem; not subject to headaches; is prone to costiveness. One eye had been lost at a very early age, and evidently from irido-choroiditis, for it has cataract, complete posterior synechia, and liquefaction of the vitreous humour; the cornea is clear, and the bulb not atrophied. The remaining eye has always been extremely near-sighted, so that without glasses her reading distance was from three to four inches. A week ago, while sewing in the evening, suddenly the light seemed to her to become of a red colour, her sight was confused, and presently extinguished. During that evening she had a violent headache. After the lapse of a week, vision improved a little, that is, she could discern objects upon the outer side, but they had a greenish hue;

straight lines seemed crooked and bent to the left side. Her visual field is limited to the temporal side; an object held directly in the axis of vision, above, below, or on the nasal side of the axis, is not seen at all. The globe has a strongly myopic form; the pupil acts feebly.

With the ophthalmoscope, the retina is seen to be pushed forwards into the vitreous humour by an amber-coloured effusion, which has detached all the retina, except for a space upon the nasal side. The optic nerve cannot be seen at all, because concealed by the retina floating in front of it; hence, the existence of the crescent-shaped atrophy of the choroid, at the margin of the optic entrance, which is the mark of sclerotico-choroiditis posterior, could not be demonstrated. I feel confident it must have been there, from the excessive myopia, from the manner in which the other eye had been destroyed in childhood, and from the sub-retinal effusion. All these are symptoms and consequences of sclerotico-choroiditis-posterior.

CASE 5. *Detachment of retina by effusion; (from meningitis?)*—Louisa H., aged 32, born in Germany, single. Patient's account of herself is so confused, as to permit little more than a guess of the etiology of her blindness. She has strabismus divergens; the pupils dilated to the medium size, and sluggish; she holds her head up, and to one side, when trying to see objects; direct vision is annulled. She came to the Infirmary for the first time in August, 1859. She was taken as an in-patient, but the evening after her admission, and before a complete investigation of her eyes could be made, meningitis set in, and she was removed from the institution. She returned again in February, 1860. She stated that one eye, the right, became blind, suddenly, three years before, while at work in the fields; whether this was coincident with sunstroke, or any other cerebral disturbance, could not be determined. The remaining eye was lost at a subsequent period; whether this happened at or before the attack of meningitis, she could not tell. She says she has been near-sighted, has had abundance of luminous flashes, and muscæ volitantes, and occasionally pain in the eyes.

The ophthalmoscope shows that in both eyes there is effusion of light-coloured fluid under the retinae; in the right eye there are opacities, like "mother-of-vinegar," pervading the vitreous humour; the choroid has spots of atrophy through which the white sclerotica can be seen; the vessels of the retina are partly obliterated.

In the retinitis, which sometimes occurs in Bright's disease of the kidney, effusion behind the retina has been observed. A case of this kind has been reported by Professor Graefe, but the effusion was small in quantity. Dr. Liebreich gives a figure of such a case, *Archiv. für Ophthalmologie*, Band. v. abth. 2.

In eyes that have become disorganized through Panophthalmitis, where the bulb is atrophied, and often a calcareous shell formed in the posterior segment of the globe, upon post-mortem inspection, the retina is often found to be completely separated from the choroid. It is rolled up into a cord or forms a cone with its base at the ora serrata and its apex at the optic nerve. The vitreous humour will be almost wholly absorbed, and the space between the retina and choroid will be filled with turbid yellowish serum. This complete detachment of the retina is not to be known usually during life, because the accompanying lesions of the globe will prevent inspection of the parts behind the iris.

There are certain diseases liable to be complicated with sub-retinal effusion, in which the patient little regards the morbid state, and much less suspects that a calamity so dread impends over him. So it was in Case 4; the great myopia was not known to depend on sclerotico-choroiditis posterior. Sometimes choroidal disease is as little heeded, and its power to occasion disaster as sadly felt. The looseness of connection between the choroid and retina favours the intrusion of fluid in this direction, while the intimate union between the choroid and sclerotica makes effusion between them very rare. It is readily understood how an effusion of blood or serum would be apt to occur from a membrane so vascular as the choroid when it is in a state of chronic congestion, when weakened by atrophy, or when acute inflammation gorges its vessels.

Symptoms of Sub-retinal Effusion.—The patient is suddenly struck blind, either totally or partially; perhaps has headache and vertigo, has chromoptic appearances, and if able to see at all, says that straight lines appear crooked, that objects are bent or their outlines waver. To external inspection the eye may seem unharmed, except a little torpor of the pupil. If the patient be directed to fix his eyes upon one hand held directly before him in his axis of vision, while the other hand be carried in a circle around this, the exact limits of his visual field can be mapped out and an approximate estimate made of the extent of the separation of the retina.

Certainty of diagnosis can be had only by aid of the ophthalmoscope. It is not necessary for the first glance to use the double convex lens, the mirror alone will reveal the sacculated and projecting retina: to trace the vessels and to make a complete examination the lens will be needed. I allude to examination with the inverted image. The pupil should be widely dilated with sulphate of atropia. Instead of the uniform red reflex from the fundus oculi, an object is seen projecting into the vitreous humour, with waving, fluttering outlines. Its colour varies greatly; sometimes it has almost the natural hue of the bottom of the eye, and at first glance might be overlooked; it may have a gray or drab shade; it may be even a deep bluish green, as is figured in Sichel's "Iconographie Ophthalmologique," and in Edward Jaeger's "Beitrag zur Pathologie des Auges." Sometimes the colour is mottled, parts being light, other parts dark. Besides the waviness of outlines, the surface of the object will exhibit folds that form, change, and disappear. The decisive point of diagnosis is in the relation which the branches of the arteria centralis retinae bear to the object. They will be of a darker or a lighter colour according with the colour of the sub-retinal fluid. They will be seen to tremble with the movements of the retina, and in tracing their course they will be seen to bend at a sudden angle, at the point where they leave the applied surface of the retina, to traverse the floating portion. This bending of the vessels and their tremulousness are characteristic of sub-retinal effusion; these signs distinguish it perfectly from free floating bodies in the vitreous

humour. If the effusion be sub-choroidal, and the fluid not too opaque, the choroidal vessels will be observed in addition to the retinal vessels. The circulation in the retinal vessels is not destroyed as was once supposed; the flow of blood is hindered, yet the current moves. The varieties in colour above described are due to the varying degrees in which blood composes the sub-retinal fluid; a less or greater admixture of hæmatine will give all the tones of colour from light drab to deep blue. When clots are mingled with nearly clear serum, the mottled hue will appear. Sometimes crystals of cholesterine are seen in the fluid.

The most usual situation for the fluid is at the most dependent part of the eye. It does not always originate in this spot, nor does it always flow down. It will not generally have a horizontal level, but rise up on the temporal or nasal side.

The loss of function is not confined to that portion of the retina which is stripped from the choroid, but a margin beyond this is impaired in function, by the violence inflicted upon it indirectly, and by the inflammatory action which is often set up.

Prognosis.—The fluid is very seldom removed; sometimes it bursts through the retina into the vitreous humour; if it have first been poured out under or near the macula lutea it may gravitate downwards, and sight be thus improved. Two interesting cases of this sort are reported by Dr. Liebreich (*Archiv. für Ophthalmologie*, B. v. abth. 2). The rational signs, to borrow the language of auscultation, of this change of position of the fluid, will be, that whereas the patient was at first quite blind, he can afterwards see better, especially by holding his head well up. It is not always the fact that the retinal membrane, when pushed away, and afterwards re-applied, as in the above cases, will recover its function—its intimate structure may be irrecoverably changed. In general, the prognosis of effusion of fluid under the retina is unfavourable to the recovery of sight. Moreover, the patient is in some cases exposed to a repetition of the effusion—so that a partial separation may become complete detachment of the retina. This is more liable to happen in sclerotico-choroiditis posterior.

Treatment.—It has been proposed to puncture the retinal sac through the sclerotica, to evacuate the fluid; but this operation has not yet been rewarded by amendment of sight. This could not be expected unless the puncture were made very soon after the effusion took place, because when much time has elapsed, the elements of the retina lose their normal structure, and consequently their sensitive qualities.

What can be effected by treatment is to control the inflammation of the adjacent portions of the retina. This is to be done by cupping from the temples, rest of the eyes and protection from light, and use of corrosive sublimate. In plethoric persons, diuretics and revulsive purgatives may become needful.